Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Atomic Structure Review**

1. Complete the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| *Subatomic particle* | *Location* | *Mass* | *Charge* |
| PROTON |  |  |  |
| NEUTRON |  |  |  |
| ELECTRON |  |  |  |

1. The number of protons in one atom of an element determines the atom’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the number of electrons determines the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the element.
2. The atomic number tells you the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. It also tells you the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a neutral atom of that element. The atomic number gives the “identity” of an element as well as its location on the periodic table.
3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the average mass of an element’s naturally occurring isotopes, taking into account the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each isotope.
4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the total number of protons and neutrons in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an atom.
5. The mass number is used to calculate the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. In order to calculate the number of neutrons, you must subtract the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. For each of the following elements, give the symbol and number of protons:
   1. Lithium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Iron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Oxygen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Krypton \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Bromine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Copper \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Mercury \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. Helium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. List the symbol and number of electrons in a neutral atom of:
   1. Uranium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Chlorine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Iodine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Xenon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Name the element that has the following numbers of particles:
   1. 26 electrons, 29 neutrons, 26 protons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 53 protons, 74 neutrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. 2 electrons (neutral atom) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. 20 protons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. 86 electrons, 125 neutrons, 82 protons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. 0 neutrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. If you ONLY know the following information, can you ALWAYS identify which element it is?
   1. Number of protons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Number of neutrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Number of electrons in a neutral atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Number of electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. Complete the table below. All atoms are neutral.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Symbol** | **Mass Number** | **# Protons** | **# Neutrons** | **# Electrons** |
|  | Na | 23 |  |  |  |
|  |  |  | 17 | 18 |  |
| Manganese |  | 66 |  |  |  |
|  | P |  |  | 16 |  |
| Iron |  | 56 |  |  | 26 |
| Silver |  |  |  | 50 |  |
|  |  | 127 |  |  | 53 |
|  |  |  | 29 | 31 |  |
|  |  | 24 | 12 |  |  |
|  |  | 39 |  | 20 |  |
|  |  | 238 |  |  | 92 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Atomic Structure Review**

1. Complete the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| *Subatomic particle* | *Location* | *Mass* | *Charge* |
| PROTON | INSIDE NUCLEUS | 1 ATOMIC MASS UNIT | +1 |
| NEUTRON | INSIDE NUCLEUS | 1 AMU | NEUTRAL (0) |
| ELECTRON | OUTSIDE NUCLEUS | ~0 AMU (1/2000TH OF A PROTON) | -1 |

1. The number of protons in one atom of an element determines the atom’s \_ATOMIC NUMBER\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the number of electrons determines the \_\_\_\_\_\_\_\_\_CHARGE\_\_\_\_\_\_\_\_\_\_ of the element.
2. The atomic number tells you the number of \_\_\_PROTONS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. It also tells you the number of \_\_\_\_\_ELECTRONS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a neutral atom of that element. The atomic number gives the “identity” of an element as well as its location on the periodic table.
3. The \_\_\_\_\_\_\_ATOMIC MASS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the average mass of an element’s naturally occurring isotopes, taking into account the \_\_\_AMOUNT (RELATIVE ABUNDANCE)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each isotope.
4. The \_\_\_\_MASS NUMBER\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an element is the total number of protons and neutrons in the \_\_\_\_NUCLEUS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an atom.
5. The mass number is used to calculate the number of \_\_\_NEUTRONS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in one atom of an element. In order to calculate the number of neutrons, you must subtract the \_\_\_PROTONS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the \_\_MASS NUMBER\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. For each of the following elements, give the symbol and number of protons:
   1. Lithium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Iron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Oxygen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Krypton \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Bromine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Copper \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Mercury \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. Helium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. List the symbol and number of electrons in a neutral atom of:
   1. Uranium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Boron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Chlorine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Iodine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Xenon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Name the element that has the following numbers of particles:
   1. 26 electrons, 29 neutrons, 26 protons \_\_\_\_IRON\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 53 protons, 74 neutrons \_\_\_\_\_\_IODINE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. 2 electrons (neutral atom) \_\_\_\_\_HELIUM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. 20 protons \_\_\_\_\_\_CALCIUM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. 86 electrons, 125 neutrons, 82 protons \_\_\_\_\_LEAD\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. 0 neutrons \_\_\_\_\_HYDROGEN\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. If you ONLY know the following information, can you ALWAYS identify which element it is?
   1. Number of protons \_\_\_\_\_\_YES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Number of neutrons \_\_\_\_NO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Number of electrons in a neutral atom \_\_\_\_\_YES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Number of electrons \_\_\_\_NO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. Complete the table below. All atoms are neutral.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Symbol** | **Mass Number** | **# Protons** | **# Neutrons** | **# Electrons** |
|  | Na |  |  |  |  |
|  |  |  | 17 | 18 |  |
| Manganese |  |  |  |  |  |
|  | P |  |  |  |  |
| Iron |  |  |  |  | 24 |
|  |  |  | 53 |  |  |
| Silver |  |  |  |  |  |
|  |  |  |  |  | 53 |
|  |  |  | 29 |  |  |
|  |  | 24 | 12 |  |  |
|  |  | 39 |  | 20 |  |
|  |  | 238 |  |  | 92 |